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MITES IN GREATER SPOTTED EAGLE NESTS

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KEY WORDS: *Spotted Eagle*, *Aquila clanga*; mites; Acari; *Mesostigmata*; *Biebrza National Park*; Poland.

The Greater Spotted Eagle (*Aquila clanga*) is among the rarest predatory birds in the world, nesting from the eastern areas of Poland, through Belarus and Russia to the Pacific coast (Meyburg 1994). In Poland, it is legally protected and classified in the Red Data Book as Endangered (Król 1992). It nests in impenetrable boggy woods and, in Poland, only about 12 pairs remain in Biebrza National Park (Maciorowski et al. 1996). Greater Spotted Eagles build their nests only in birches (*Betula* spp.), black beech (*Alnus glutinosa*) and, less frequently, in oaks

(*Quercus* spp.) and willows (*Salix* spp.). While the mite fauna in the nests of several predatory birds has been studied in Europe (Nordberg 1936, Philips 1981, Wiśniewski and Hirschmann 1985, 1990, Mizera 1990, Mašan 1993), the acarofauna of Greater Spotted Eagle nests has never been described. In this paper, we identify mites of the order *Mesostigmata* which inhabit the nests of Greater Spotted Eagles in Poland. These mites are small (adult length 0.4–1.6 mm), free-living arachnids which have phoretic or other relationships with birds.

METHODS

Samples were obtained at two Greater Spotted Eagle nests in Biebrza National Park in northeastern Poland.

The lining of the first nest was collected in 1994. The sample contained branches and grass and weighed about 300 g. At the time of collection, there was one 7-wk-old nestling in the nest. Subsequent observation confirmed that this bird later successfully fledged. The nest was built in the crown of an aspen tree (*Populus tremuloides*) in 1991 and was reused each year. It was built mainly from branches and mistletoe. The sample from the second nest was collected in 1995. It had a similar composition and was approximately the same weight. This nest was in a birch tree.

Mites were extracted from collected material by funnel-heat dessication and preserved in 70% alcohol. For maceration and bleaching, mites were placed in a drop of lacto-phenol on a slide and a coverslip was applied. Permanent preparations were made in polyvinyl alcohol (Evans 1992).

RESULTS AND DISCUSSION

Only mites of the order *Mesostigmata* were identified to genus and species level. Two subclasses of mites were represented, the Anactinotrichida and Actinotrichida. In the subclass Anactinotrichida, we identified mites in seven families of the suborder Gamasina. Nest II contained one deutonymph of *Parasitus consanguineus* which is a rare species in the Parasitidae found in arable and meadow soils, in compost, stable manure, and in decomposing organic material (Karg 1993). This is a new species to the Polish fauna. We also found a Macrochelid, *Macrocheles ancyclus*, in both Nest I (104 females, 28 males, 21 deutonymphs, 9 protonymphs) and Nest II (242 females, 28 males, 15 deutonymphs, 5 protonymphs). It has been found previously in the decaying wood of aspen trees (Krauss 1970) but it is also a new species to the Polish fauna. Macrochelid mites are not uncommon in birds nests and are known from other raptor nests (Ambros et al. 1992, Philips et al. 1983, Zeman and Jurík 1981).

We also identified three species of mites in the family Ascidae: *Arctoseius cetratus*, *Proctolaelaps pini*, and *P. pygmaeus*. We found one female and one protonymph of *Arctoseius cetratus* in Nest I and two females in Nest II. This species has previously been found in soils of arable fields, in compost, in deciduous and mixed forests, and humus between plant roots (Karg 1993). In Nest II, we also found 37 females, seven males, nine deutonymphs, and five protonymphs of *P. pini*. It is typically found in pine stumps and on bark beetles (*Hylastes* spp.) (Karg 1993). We also found five females, one male, and one deutonymph of *P. pygmaeus* in Nest II. It has been previously found in soil, moss, decaying plants, and nests of small mammals (Bregetova 1977a).

Three species of mites were in the family Laelapidae. One female, one male, and one deutonymph of *Androlaelaps casalis* occurred in Nest II. It is a species typically found in the soils of meadows, humus between roots, hay and straw, and in nests of rodents and birds (Karg 1993), such as raptors (Philips 1981, Zeman and Jurík 1981). Also in Nest II, we found two females of *Hypoaspis* (*Cos-*

molaelaps) *vacua* which is typically encountered in deciduous and conifer forests, in humus and moss, in decaying wood, and in nests of ants of the genus *Lasius* (Bregetova 1977b, Karg 1993). Lastly, we identified two females of *Hypoaspis* (*Pneumolaelaps*) *lubrica* in Nest I. It is typically found on rotten plants, in rodent nests, and on rodents themselves, as well as in the nests of Sand Martins (*Riparia riparia*) (Karg 1993).

Three species in the family Digamasellidae occurred in both nests. A total of 40 females, four males, and 50 deutonymphs of *Dendrolaelaps* (*Punctodendrolaelaps*) *fallax* were in Nest I but only five females and one deutonymph were found in Nest II. This is a species that is commonly found in compost and stable manure (Hirschmann and Wiśniewski 1982, Karg 1993). Twelve female, one male, three deutonymph, and one larva of *Dendrolaelaps* (*Punctodendrolaelaps*) *wengrisae* were found in Nest II. It has been previously found in ant (*Formica fusca*) nests (Hirschmann and Wiśniewski 1982). Only one female of *Dendrolaelaps* (*Apophyseodendrolaelaps*) *zwoelferi* was in Nest II. It has been previously found in nests of the *Formica rufa*, under pine bark, in the pathways of *Dryocoetes autographus*, and in Sand Martin nests (Ščerbak 1980).

A female and a deutonymph of two additional species, *Paragarmania* sp. (Phytoseiidae) and *Halolaelaps* sp. (Halolaelapidae) were also found in Nest II.

We found mites representing five families in the suborder Uropodina. One species each in the families Trachytidae and Polyaspididae occurred in Nest I. We found one female *Trachytes aegrota* (Trachytidae). It is a species found in moss, soil, grass, often in litter of deciduous and conifer forests, in rotting wood, in the paths of bark beetles, in bird nests, nests of the mole *Talpa europaea*, and ant nests (Karg 1989, Wiśniewski and Hirschmann 1993). A total of 44 females, 49 males, 51 deutonymphs, 38 protonymphs, and one larva of *Uroseius* (*Apionoseius*) *infirmus* (Polyaspididae) were also identified from this nest. This species is typically found in moldy wood, in rotting parts of plants, in the litter of deciduous and coniferous forests, and in bird nests (Kadite and Petrova 1977, Karg 1989, Mašan 1993, Wiśniewski and Hirschmann 1993).

Three species in the family Trematuridae were in both nests but they were not common. A female and male of *Nenteria floralis*, a species associated with dunghills and greenhouse soils (Wiśniewski and Hirschmann 1993), were found in Nest II. This is a new species to the Polish fauna. Four females, three males, two deutonymphs, three protonymphs, and one larva of *Nenteria pandionis* were identified in Nest I and 74 females, 26 males, 229 deutonymphs, 48 protonymphs, and nine larvae were found in Nest II. This species has only been found in Osprey (*Pandion haliaetus*) and White-tailed Sea Eagle (*Haliaeetus albicilla*) nests (Wiśniewski and Hirschmann 1985, 1990) (Fig. 1). Two females of *Trichouropoda ovalis*, a species commonly found in hay, moss, mushrooms, straw, ant nests, the paths of *Scolytidae*, on *Cerambycidae* and *Scarabaeidae*, in decaying wood, in hollow tree trunks,

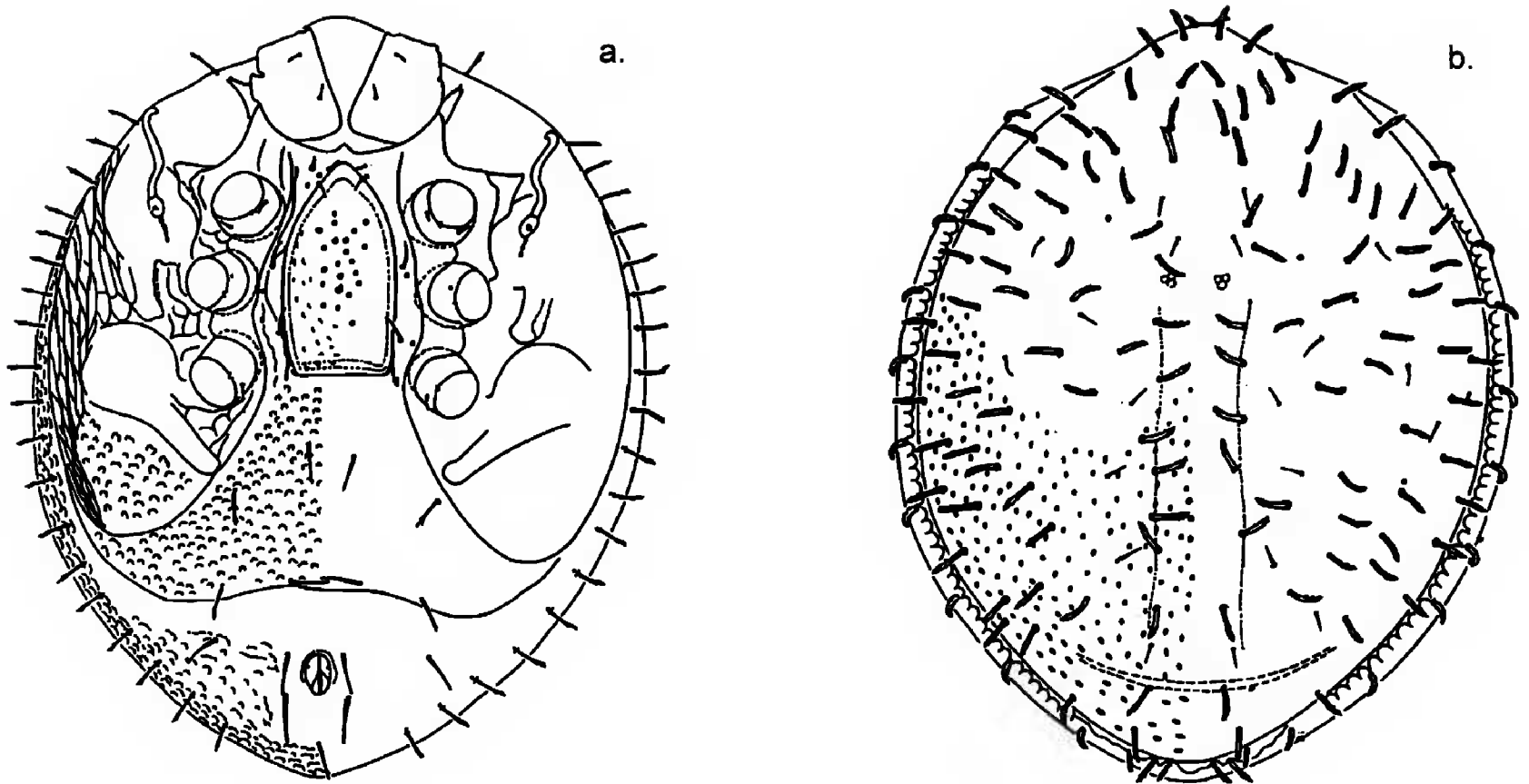


Figure 1. A dorsal view of *Nenteria pandioni* (Wiśniewski and Hirschmann 1985).

and in bird and mole nests (Wiśniewski and Hirschmann 1993), was also found in Nest II.

Two species of mites in the family Urodinychidae, *Dinychus perforatus* and *Uroobovella obovata*, were identified. One female of *Dinychus perforatus* was found in Nest I and *Uroobovella obovata* was found in both Nest I (two females, two males, and one deutonymph) and Nest II (seven females, three males, and two deutonymphs). Both species are usually encountered in rotting litter of deciduous forests, meadow soils, moss, decaying plant material, mole nests, and phoretically on birds (Karg 1989, Wiśniewski and Hirschmann 1993).

We found one representative of the family Uropodidae, *Uropoda (Phaulodinychus) hamulifera*. Ten deutonymphs and two protonymphs were found in both nests. This species is found in ant nests and stable manure (Karg 1989, Wiśniewski and Hirschmann 1993).

In the material collected, 1267 mites in the order Mesostigmata and 646 in the subclass Actinotrichida were found. Mites in the order Mesostigmata represented 21 species and 12 families. Eleven and 16 species of mites were found in Nests I and II, respectively. Six species were common to both nests. The most frequently found species in Nest I were *U. infirmus* (183 individuals), *M. ancyleus* (162), *D. fallax* (94), and *N. pandioni* (13). In Nest II, the most frequent species were *N. pandioni* (386), *M. ancyleus* (290), *P. pini* (58), and *D. wengrisae* (17). Species new to the Polish fauna were *M. ancyleus*, *N. floralis*, and *P. consanguineus*.

It is difficult to evaluate the relationship between free-living mites and predatory birds; however, some species of mites occur, almost exclusively, in nests of these birds.

Previously *N. pandioni* was found only in the nests of Ospreys and White-tailed Sea Eagles (Wiśniewski and Hirschmann 1985). The large numbers of all stages of development of *N. pandioni* that we found in Greater Spotted Eagle nests appear to confirm that eagle nests provide a specific microhabitat for this mite.

RESUMEN.—Los nidos de aves rapaces proveen un microhabitat para pequeños invertebrados, particularmente para piojos. Estudiamos la acarofauna del orden Mesostigmata que habita en nidos de *Aquila clanga* en el parque Nacional de Biebrza en el noreste de Polonia. Veintiuna especies de piojos fueron identificados. Una especie: *Nenteria pandioni*, aparentemente es dependiente del habitat de anidación de *Haliaeetus albicilla* y de *Pandion haliaetus*. Las otras especies fueron encontradas en madera podrida, basura, compost y nidos de aves.

[Traducción de César Márquez]

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FOOD HABITS OF THE RUFIOUS-LEGGED OWL (*STRIX RUFIPES*) IN THE MEDITERRANEAN SCLEROPHYLLOUS FOREST OF CENTRAL CHILE

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KEY WORDS: *Rufous-legged Owl*; *Strix rufipes*; *food habits*; *Mediterranean sclerophyllous forest*; *central Chile*.

The Rufous-legged Owl (*Strix rufipes*) inhabits old-growth temperate rainforest of southern South America (Housse 1945, Goodall et al. 1946, Johnson 1967, Vuilleumier 1985, Martínez and Jaksic 1996, 1997). Infor-

mation on the species is limited, and only plumage, habitat and distribution have been described (Housse 1945, Goodall et al. 1946, Johnson 1967, Vuilleumier 1985, Araya and Millie 1989). Martínez (1993a, 1996) and Martínez and Jaksic (1996, 1997) have recently reported on population density, specific habitat requirements and diet of the Rufous-legged Owl in temperate rainforests of